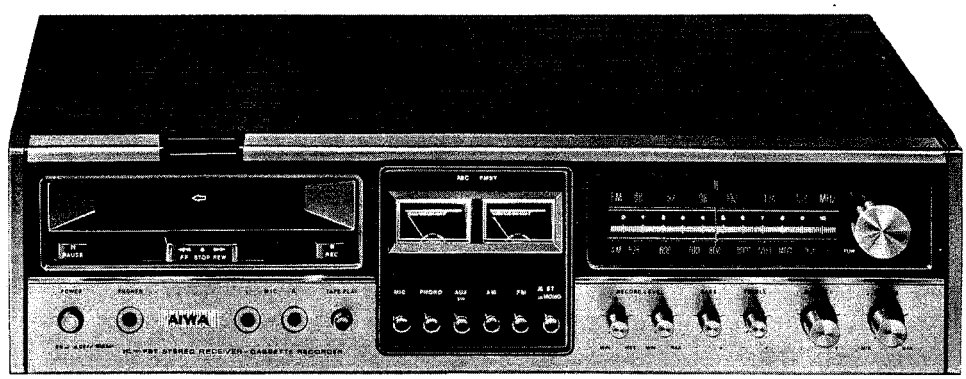
CASSETTE RECORDER-FM/AM STEREO SYSTEM

MODEL TPR-3001H,C

AIWA®

[SERVICE MANUAL]



ISO

Set using ISO screws

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SPECIFICATIONS

Type: Cassette recorder – FM/AM stereo system
Transistors: 38 transistors radio, 16 auxiliary transistors, 1 FET, 1 IC, 16 diodes, 8 varistors & 1 thyristor.

《 TUNER SECTION 》

Frequency range:
FM 87.5 ~ 108 MHz.
AM 525 ~ 1,605 kHz.
Sensitivity: FM 4μV (IHF Standards)
AM 180μV/m (IHF Standards)
FM frequency response:
50 ~ 15,000 Hz.
FM S/N ratio: 60 dB
FM distortion: Less than 0.5%
Antennas: FM antenna: 300Ω & 75Ω
AM antenna: Bar antenna built in.
Antenna terminal.

《 FM MPX SECTION 》

Separation: Better than 38 dB (1 kHz.)
Distortion: Less than 0.7%

《 TAPE RECORDER SECTION 》

Recording tracks:
4-track 2-channel recording system
Tape speed: 1-7/8 ips. (4.8 cm/sec.)
Recording time:
90 min. (w/C-90 cassette, two ways)
Wow & flutter: 0.25% (playback). RMS
Frequency response:
30 ~ 12,000 Hz.
S/N ratio: Better than 45 dB
Bias frequency: 84 kHz.
Erasing system: AC erase
Servo motor
Recording level indicator:
VU meter

《 AUDIO SECTION 》

Circuitry: Complementary SEPP ITL/OTL circuit.
Output: Music power, 30 W
12 W + 12 W
Frequency response:
30 ~ 50,000 Hz. (Main amp.)
Distortion factor:
Less than 0.3% (at 10 W + 10 W 1,000 Hz output).
Gain & Input impedance:
PHONO, 5 mV (50 kΩ)
MIC, 1.8 mV (10 kΩ)
AUX, 300 mV (50 kΩ)
DIN (IN) 500 mV (100 kΩ)
Output level & impedance:
REC OUT, 400 mV (10 kΩ)
DIN (OUT) 30 mV (80 kΩ)
SP, 4 ~ 16Ω
Tone control : Bass control : 100 Hz ± 10 dB
Treble control : 10 kHz ± 10 dB
Equalizer: PHONO RIAA
Damping factor: 30 (8Ω)
Residual noise: Less than 1.5 mV (at 8Ω load, min. vol.)

《 BUILT-IN FEATURES 》

Automatic Stop/Cassette Ejection System
Slot-in (Insert-to-play) System
VU Meter (recording level/output level indicator)
Recording Indicator Lamp
FM MPX Indicator Lamp
Tuning Pointer
Pause Button
Function Lever (F.F. STOP, REW)
Record Button
Stereo Headphone Jack
Automatic FM Monaural/Stereo Switching Circuit
4-channel Decord Connection Terminal
REC/PB DIN jack
Sleep Timer Device
Mixing Record Circuit
AC Outlet
Tape Check Window
REC OUT Jack

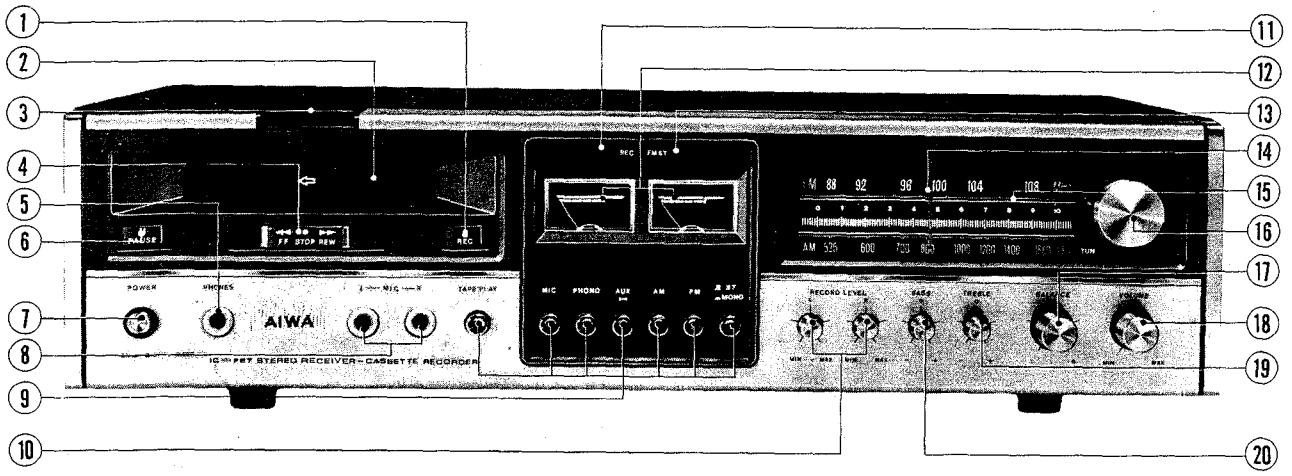
Power source: TPR-3001C . . . . .
AC 117 V, 50/60 Hz.
TPR-3001H . . . . .
AC 100 ~ 120 V/220 ~ 240 V, switchable
Power consumption:
60 W with max. output
Dimensions: 18-15/16" (W) x 5-3/8" (H) x 12-5/8" (D)
(480 x 136 x 320 mm)
Weight: 17.6 lbs. (8 kg)

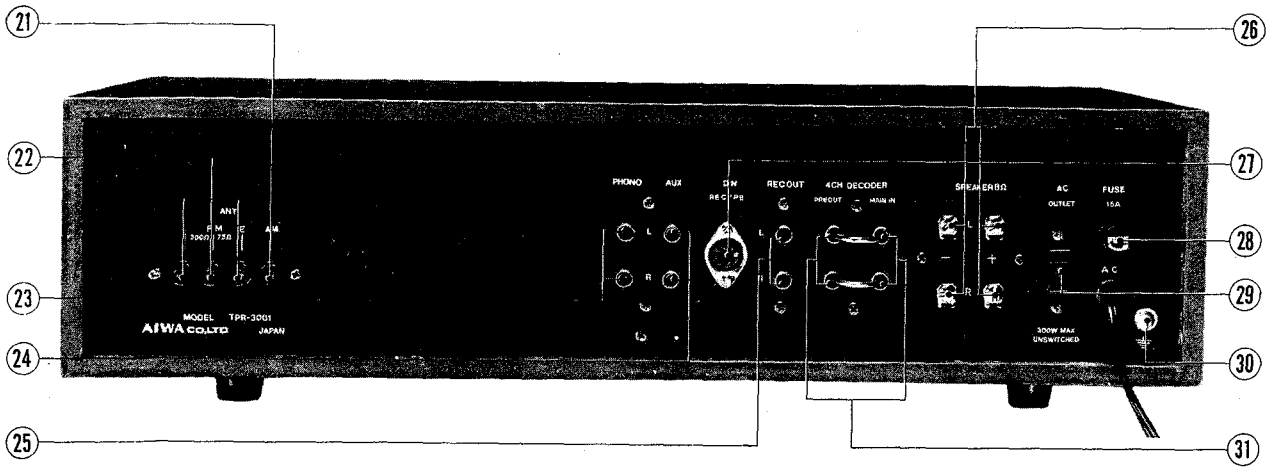
《 ACCESSORIES 》

Cassette tape	x 1
Indoor FM antenna	x 1
Fuse	x 1
Connection cord	x 2

- Specifications and outside design of this set are subject to change without prior notice.

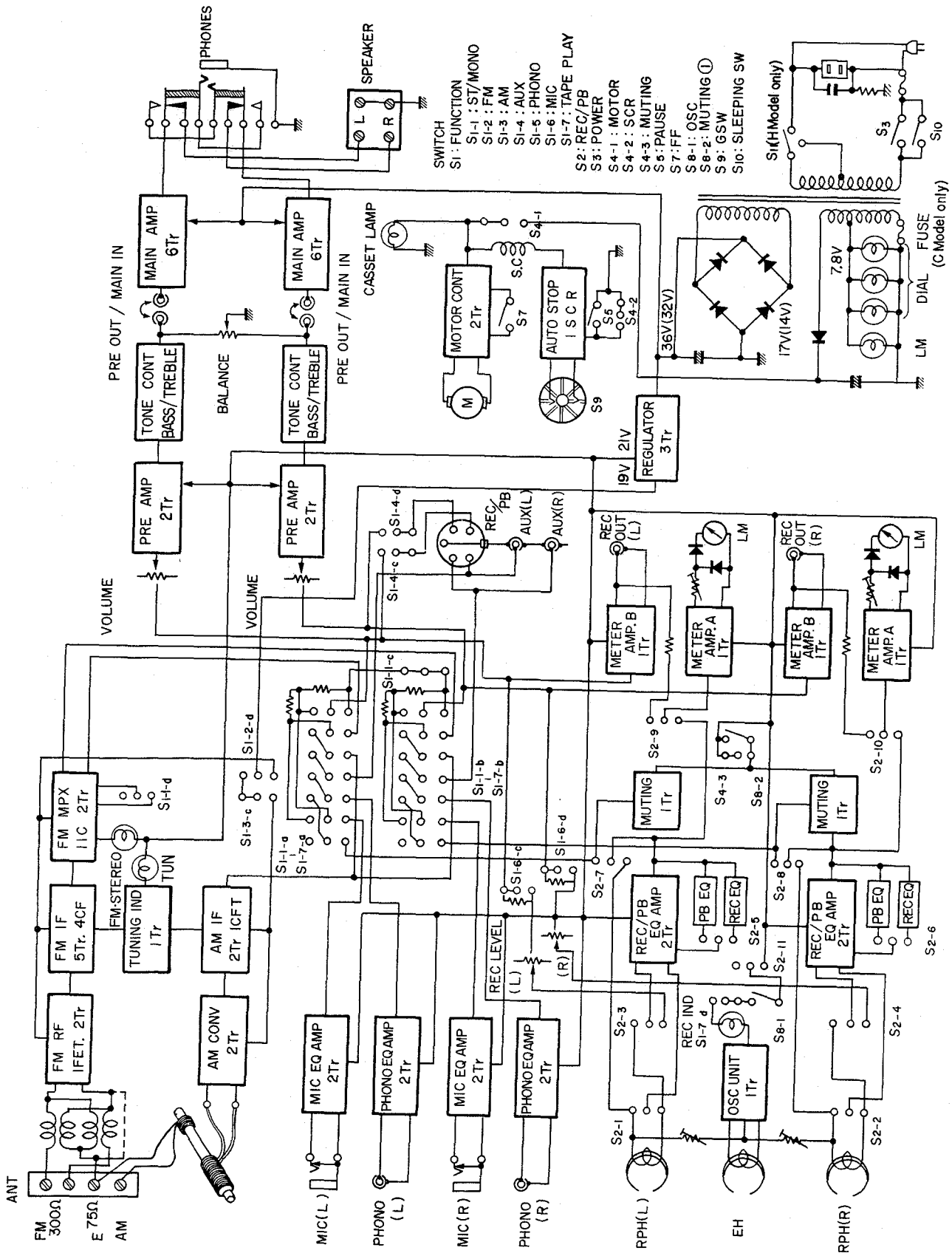
APPELLATIONS



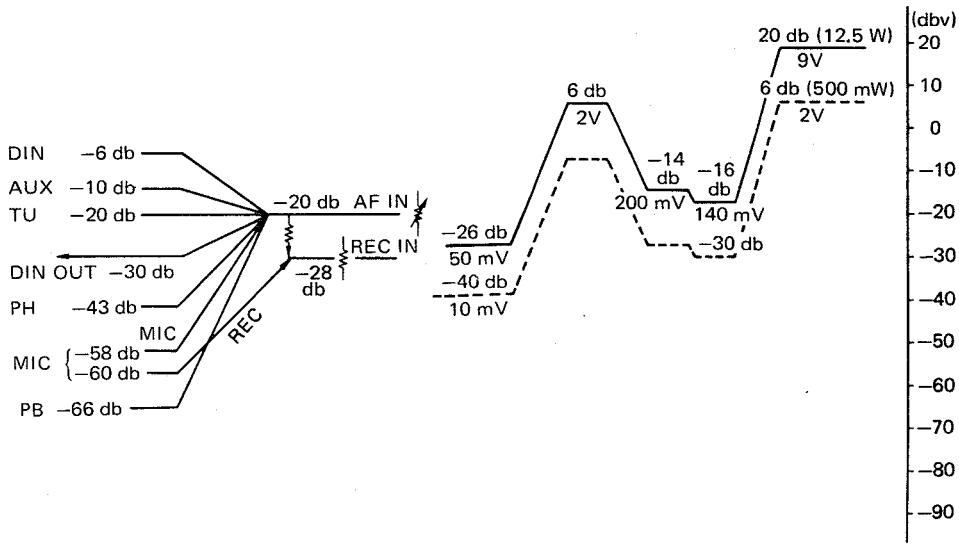


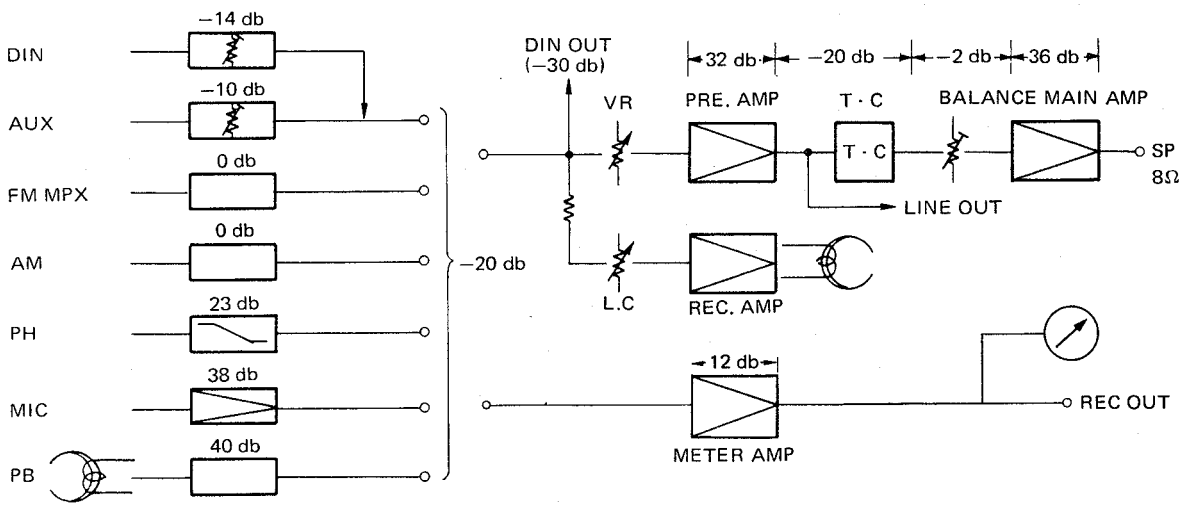
1. Record Button (·REC)
2. Cassette Slot Dust Cover
3. Tape Check Window
4. Function Lever (FF STOP REW)
5. Headphone Jack (PHONES)
6. Pause Button (PAUSE)
7. Power On-Off/Sleep Button (Power/Sleep)
8. MIC Input Jack (L-MIC-R)
9. Selector Button
10. Recording Level Control Knob (RECORD LEVEL)
11. Record Indicator (REC)
12. VU Meter
13. FM Stereo Indicator (FM ST)
14. Tuning Pointer
15. Tuning Dial Scale
16. Tuning Knob
17. Balance Control Knob (BALANCE)
18. Volume Control Knob (VOLUME)
19. Treble Control Knob (TREBLE)
20. Bass Control Knob (BASS)
21. AM Antenna Terminal
22. FM Antenna Terminal
23. PHONO Input Jack (PHONO)
24. AUX Input Jack (AUX)
25. REC OUT Jack (REC OUT)
26. External Speaker Terminal (SPEAKER)
27. DIN Jack (DIN)
28. Power Fuse Holder (FUSE)
29. AC Outlet (AC OUTLET)
30. Grounding Terminal
31. 4-Channel Decoder Connection Terminal (4CH DECODER)

BLOCK DIAGRAM

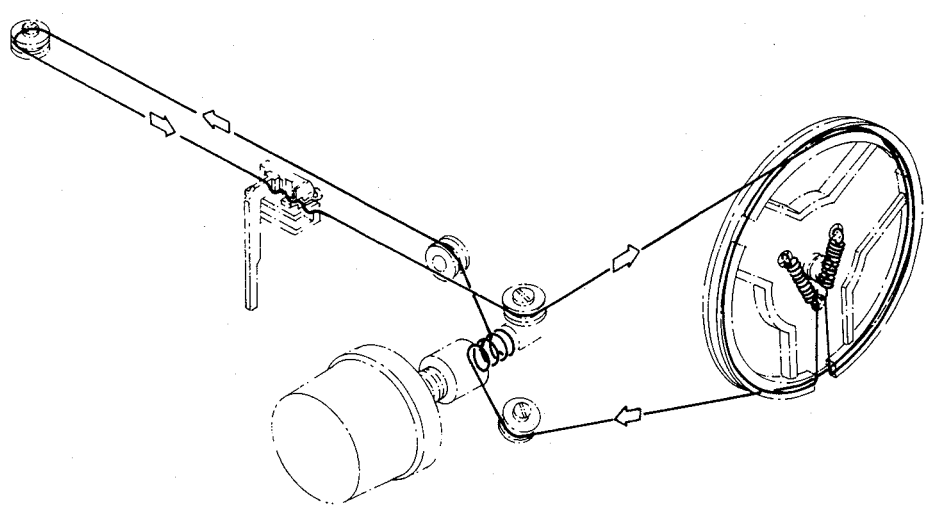


LEVEL DIAGRAM



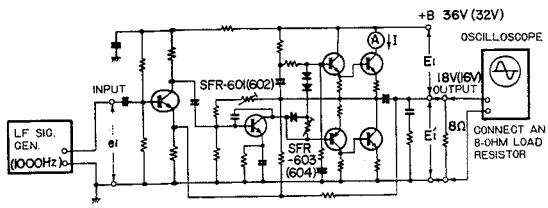


DIAL STRING



ALIGNMENT PROCEDURES

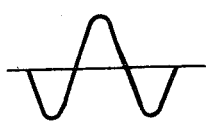
MAIN AMPLIFIER SECTION



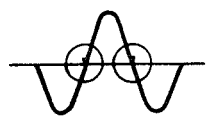
1. Bias Current Adjustment

1) Connect a DC ammeter (100mA) between collector and +B of the power transistor. (Input signal: 0)
2) Adjust SFR-603 (or SFR-604) so that the current may be 10mA ~ 15mA.

Note:
Take care to avoid excessive bias current.



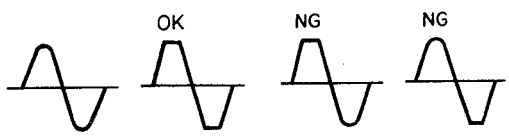
1. BIAS CURRENT ADEQUATE



2. BIAS CURRENT INSUFFICIENT

2. Voltage Balancing

1) Adjust SFR-601 (or SFR-602) so that E1 and E1' may give equal voltage.
2) Make sure again that the bias current mentioned in 1 above is adequate.
3) Feed signal of 1000Hz through input terminals and check to confirm that peak and base of the waveform are equally sliced. Make it sure further with SFR-601 (or SFR-602).



WHEN INPUT IS LOW.

WHEN INPUT IS HIGH. Make sure the peak and base are equally sliced.

WHEN INPUT IS HIGH. The peak and base not sliced equally.

TAPE RECORDER SECTION

1. Oscillation (Bias Current) Adjustment

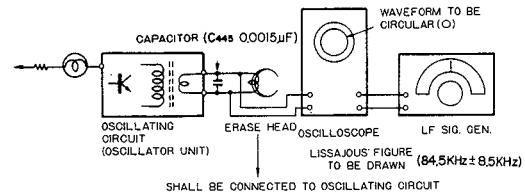
1) Oscillating frequency and oscillating current:

Oscillating frequency:	84.5kHz ±8.5kHz
Erasing current:	28mA ~ 32mA
Recording bias current:	L-ch = 680μA ±20μA
	R-ch = 780μA ±20μA

2) Confirmation of the oscillating frequency:

The oscillating circuit uses an oscillator unit, so that the frequency is governed by the oscillator unit, EH and capacitor (C445, 0.0015μF).

2–1) Connections

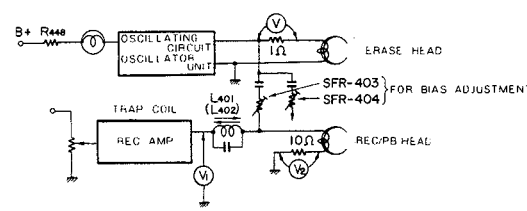


2–2) Confirmation of the oscillating frequency

a) Connect the measuring instruments as instructed in 2–1) Connections above.
b) Check to see if waveform indicated on the oscilloscope is approximately circular within the 84.5kHz ±8.5kHz range of the LF Signal Generator's frequency.
(It's good if the waveform is circular or very close to it.)
c) When the waveform indicated on the oscilloscope can not be adjusted at least to an approximate circle or no oscillation detected:
- The oscillator unit defective: Replace.
(When the frequency is deviating, check EH or C445.)
- EH defective: Replace.
(Except when the EH wiring is broken, replace or add C445.)
- C445 (0.0015μF) defective: Replace, or add another capacitor (when the frequency is high).

3) Oscillating current (Bias current, Erasing current):

3–1) Connections



3–2)

a) Trap coil adjustment:
Adjust the trap coil L401 (or L402) for alignment with the oscillating frequency and minimize possible current leak to the Record Amp. side (V1). (Adjust for both L and R channels.)

b) Erasing current:
Connect a 1-ohm resistor (in series) between the erase head and oscillating circuit and check to see if voltage measured between both ends of the 1-ohm resistor gives 28mV ~ 32mV (28mA ~ 32mA). When value of the current does not fall within the specified range of values, make adjustment by means of R448.

c) Bias current:
Adjust SFR-403 (L-ch) and SFR-404 (R-ch) so that voltage measured between both ends of the 10-ohm resistor connected in series to RPH will be 6.8mV (660μA ~ 700μA) for the left channel and 7.8mV (760μA ~ 800μA) for the right channel.

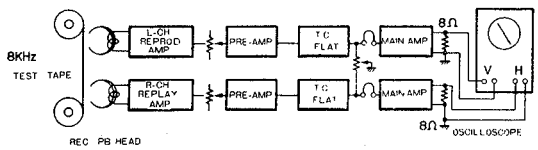
2. RPH Alignment

1) Tape travel test:

Run cassette tape (C-120) in Play and adjust height of RPH as well as inclination of the pinch roller in such a way that tape will not get twisted nor entangled.

2) Phase and output adjustments for L and R channels:

2–1) Connections



2–2) Alignment steps (Azimuth adjustment)

a) Connect L-ch and R-ch output terminals to V and H input terminals of the oscilloscope respectively.

Note: Stereo/Monaural Selector Switch: Set at STEREO
Tone Control: Set at FLAT

b) Play an 8kHz test tape (or 6.3kHz test tape if the former is not available) to observe waveform indicated on the oscilloscope. Adjust RPH azimuth so that the waveform indicated may become a straight oblique line at its maximum.

Note: Whether the line indicated in the oscilloscope should be slant leftward or rightward during the waveform observation is determined by that indicated when the same signal is fed in through V and H input terminals; the former should be slanting in the same direction as the latter.

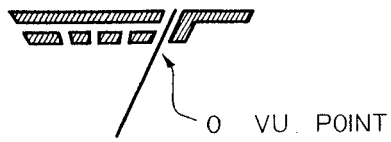
3. Adjustment of Recording Level Meter

1–1) Connections

Refer to the connections shown in 1–3) ~ 3–1), TAPE RECORDER SECTION.

1–2) Alignment steps

Disconnect the oscillating circuit from power source and feed in through MIC jacks (L-ch and R-ch) 1000Hz signal of the same level by the LF signal generator. Now, adjust the input level by means of ATT (resistance attenuator) so that V2 or voltage measured between both ends of the 10-ohm resistor may give 0.6mV (60μV). Make adjustment with SFR-401 or SFR-402 so that the Level Meter's pointer may be at 0 VU point.



TUNER & MPX SECTION

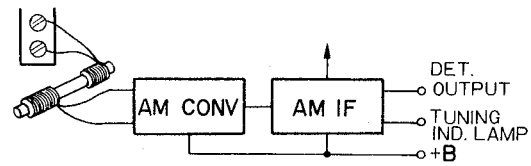
1. AM Alignment

1) IF stage:

Uses ceramic filter and non-adjusting type coil.

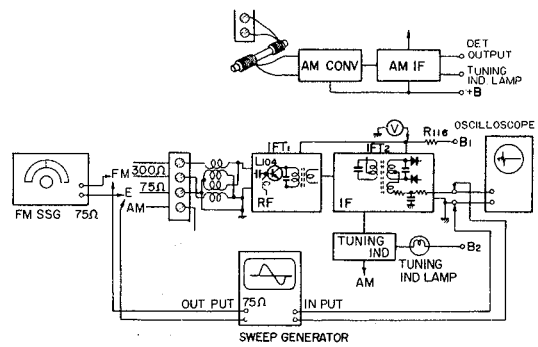
2) RF stage:

Adjusted in the same manner as an AM radio (Tracking adjustment).



2. FM Alignment

1) Connections:



2) Alignment steps:

2–1) IF alignment

a) Adjust IF power source voltage (V) to 9V ~ 9.5V by means of R116.

b) Connect the sweep generator as shown under 1) connections, above.

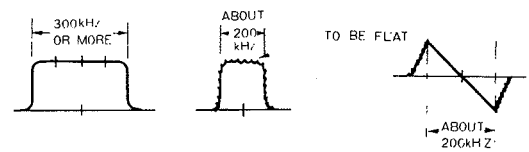
c) Pull out the upper core of IFT2 to obtain single-peak waveform characteristic.

d) Adjust in advance the choke coil L104 of RF stage to give the single-peak characteristic.

e) Adjust to improve linearity by means of the lower core of IFT2. (High field strength)

f) Adjust the single-peak characteristic by means of IFT1 and L104. (Low field strength)

g) Using the upper core of IFT2, adjust the waveform to S curve. (Low field strength)



2–2) RF alignment

a) Connect FM SSG and oscilloscope as shown under 1) Connections, above.

b) The tracking adjustment is made in the same manner as for an ordinary FM radio.

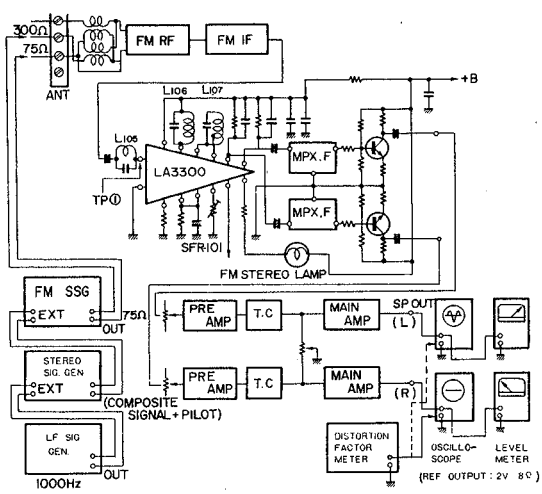
3. MPX Alignment

1) Measuring conditions:

FM SSG Receiving frequency
83MHz (98MHz)
Percentabe modulation
PILOT (19kHz) 10% (FM SSG 7.5kHz)
MAIN (L + R) 45% (FM SSG 67.5kHz)
SUB (L – R) 45% w/(L + R) + (L – R)
Modulating frequency
1000Hz (400Hz, 5000Hz) from FM SSG
Reference input
54dB (FM SSG output, 75Ω)
Reference Output of Speaker Output Terminal
2V/8Ω

2) Connections

L105: 67kHz coil (SCA)
Fixed (non-adjusting)
L106: 19kHz coil
As a rule, non-adjusting
L107: 38kHz coil
Adjust the 38kHz and distortion factor
SFR-101: Adjust separation
MPX F: 38kHz and 19kHz filters . . . Non-adjusti
Non-adjusting



3) Alignment steps (along with overall adjustment):

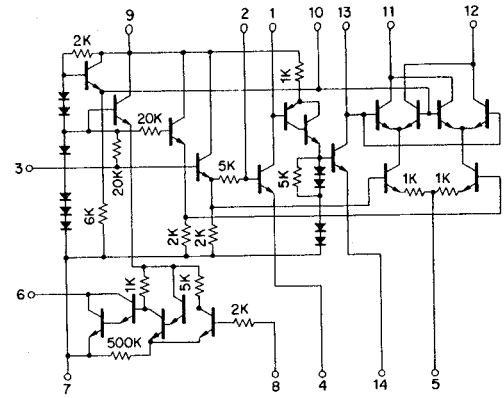
3–1) Check the 67kHz coil (SCA)

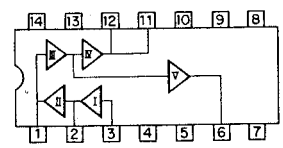
* The 67kHz coil L105 is a non-adjusting (fixed) type.

3–2) Adjustments for the optimum separation and distortion factor:

a) For connections of the measuring instruments, refer to 2–1) Connections, TUNER & MPX SECTION.
b) Set FM SSG at 83MHz (98MHz) and Stereo Signal Gen. at MONO position.
c) Tune the FM tuner in 83MHz (98MHz), the tuning point selected at the point of the optimum distortion factor.
d) Turn the Stereo Sig. Gen. to STEREO and modulate FM SSG with SUB (L-R) signal. Now, adjust L107 to obtain the optimum distortion factor.
e) Operate the Stereo Sig. Gen. to give L (or R) signal. Adjust SFR-101 and set it at the point where the best separation effect is obtained.

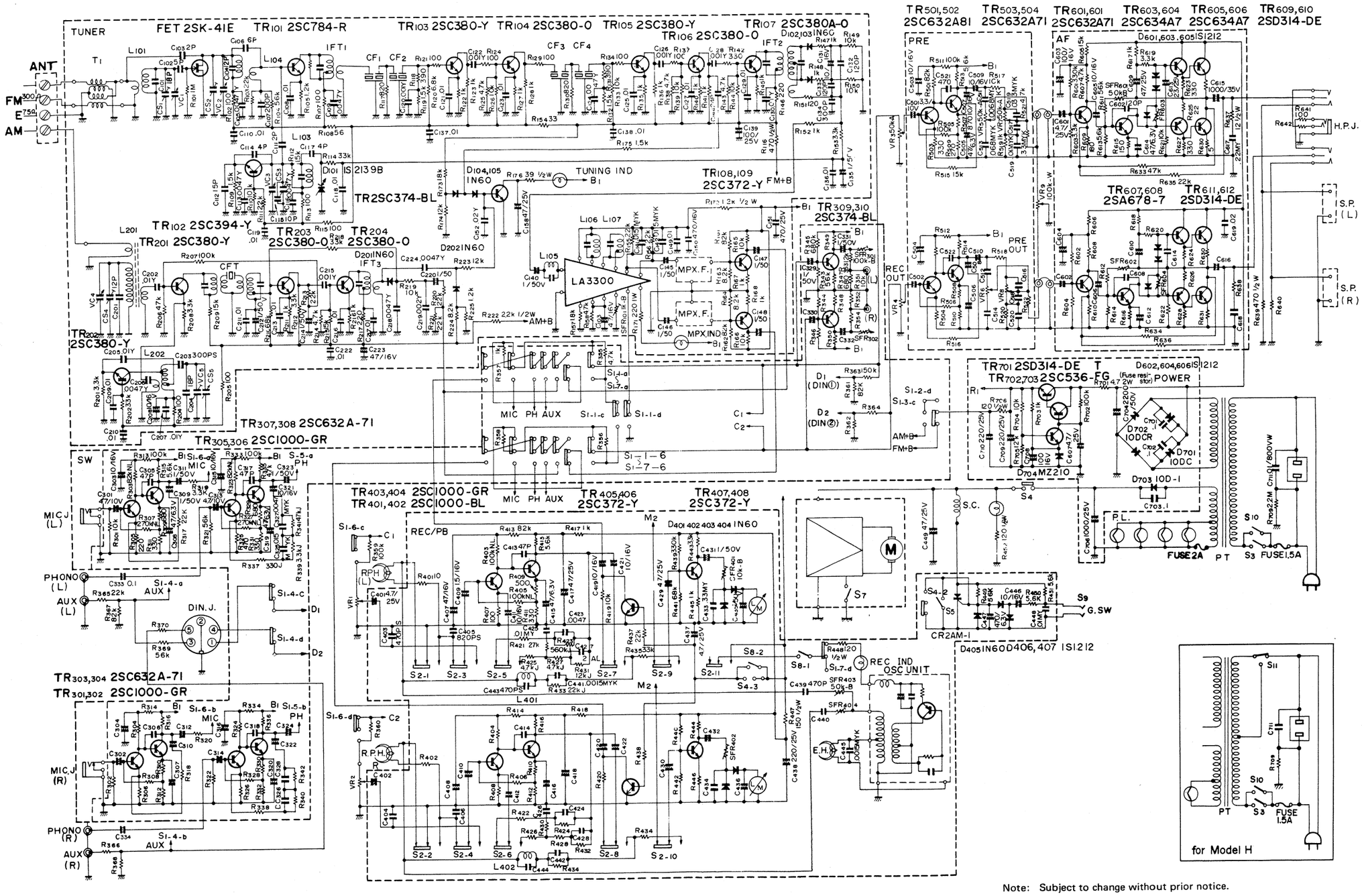
CIRCUIT DIAGRAM · IC





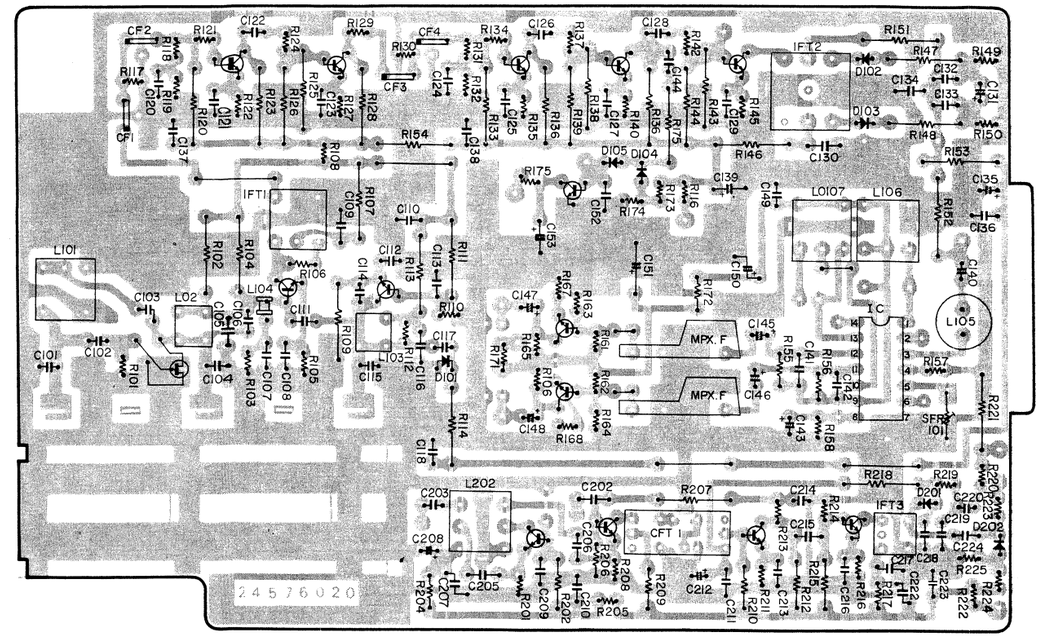
I, II. Composite amplifier
III. Doubler
IV. Stereo decoder
V. Lamp driver

SCHEMATIC DIAGRAM

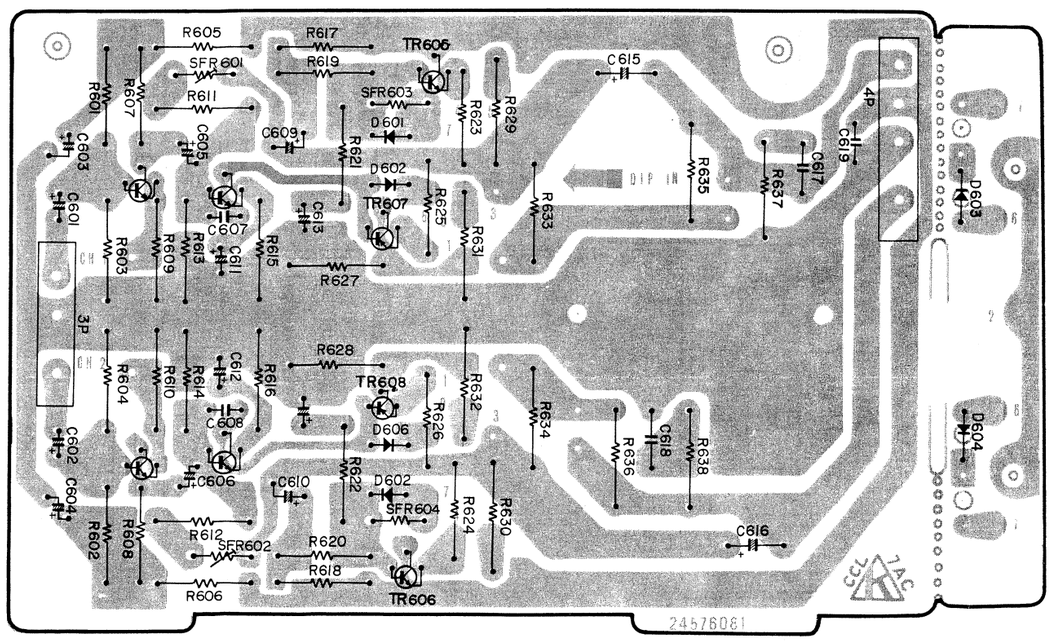


Note: Subject to change without prior notice.

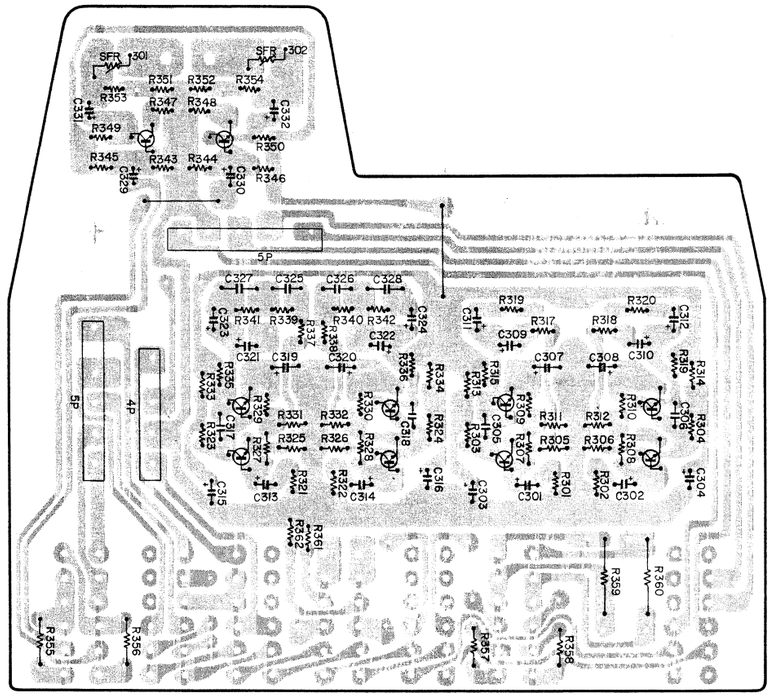
TUNER CIRCUIT BOARD (P.C.B-A)



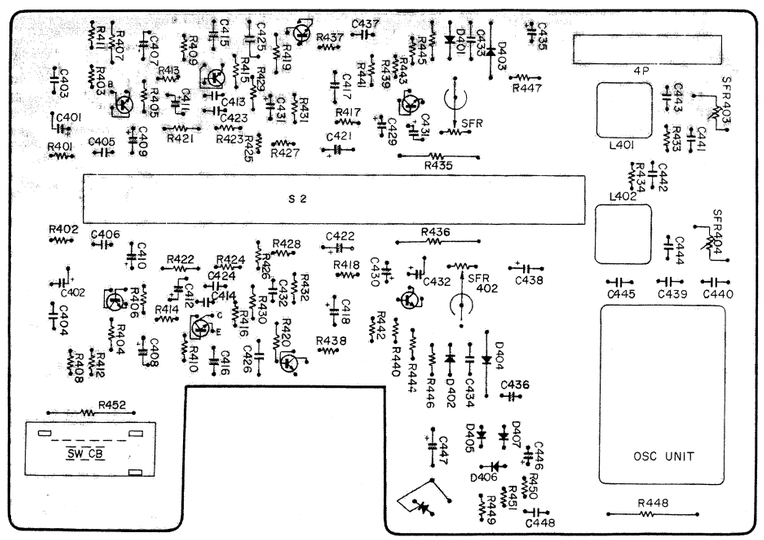
AF CIRCUIT BOARD (P.C.B-B)



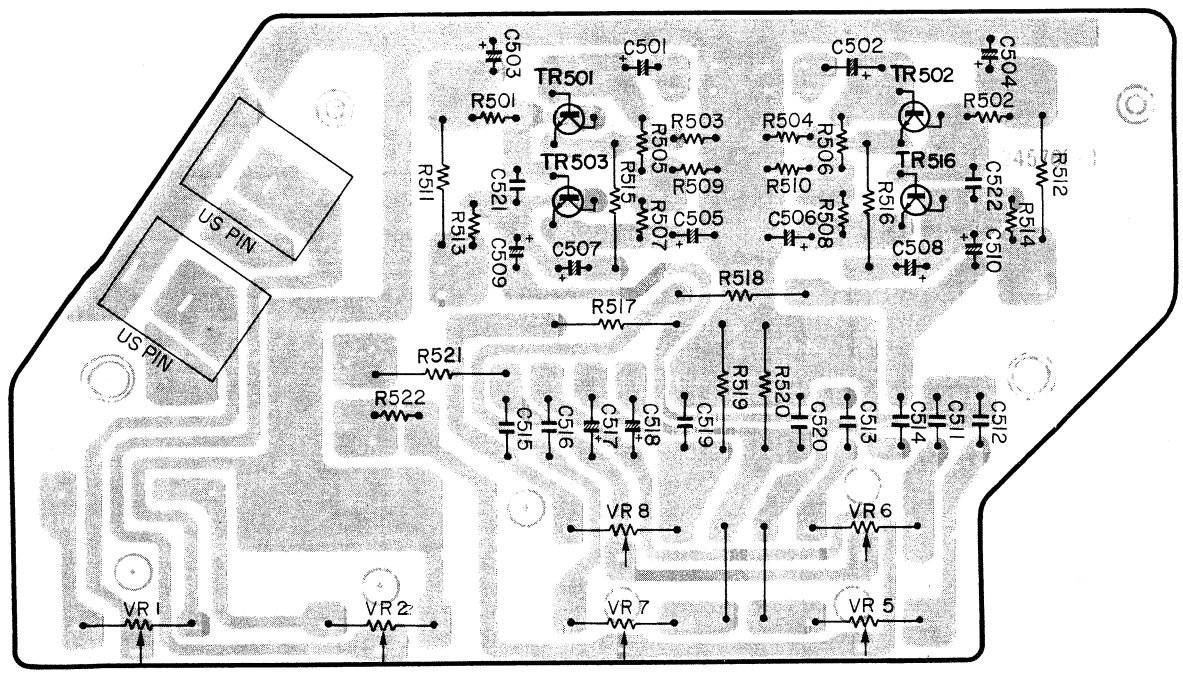
SWITCH CIRCUIT BOARD (P.C.B-C)



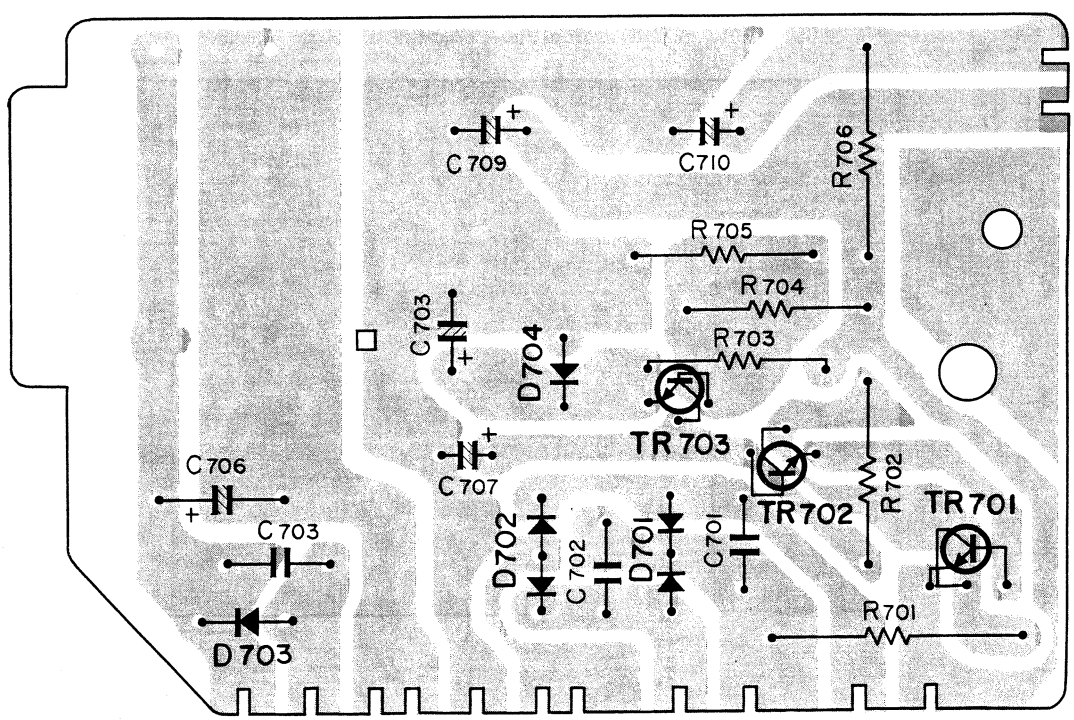
REC CIRCUIT BOARD (P.C.B-D)



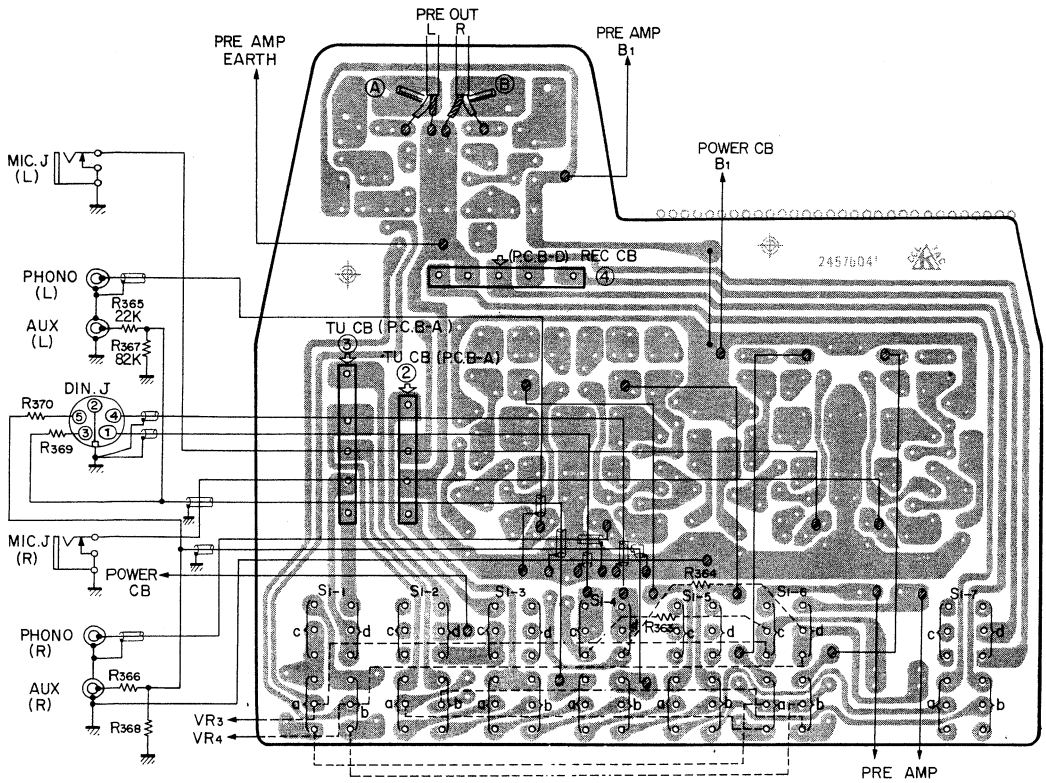
PRE CIRCUIT BOARD (P.C.B-E)



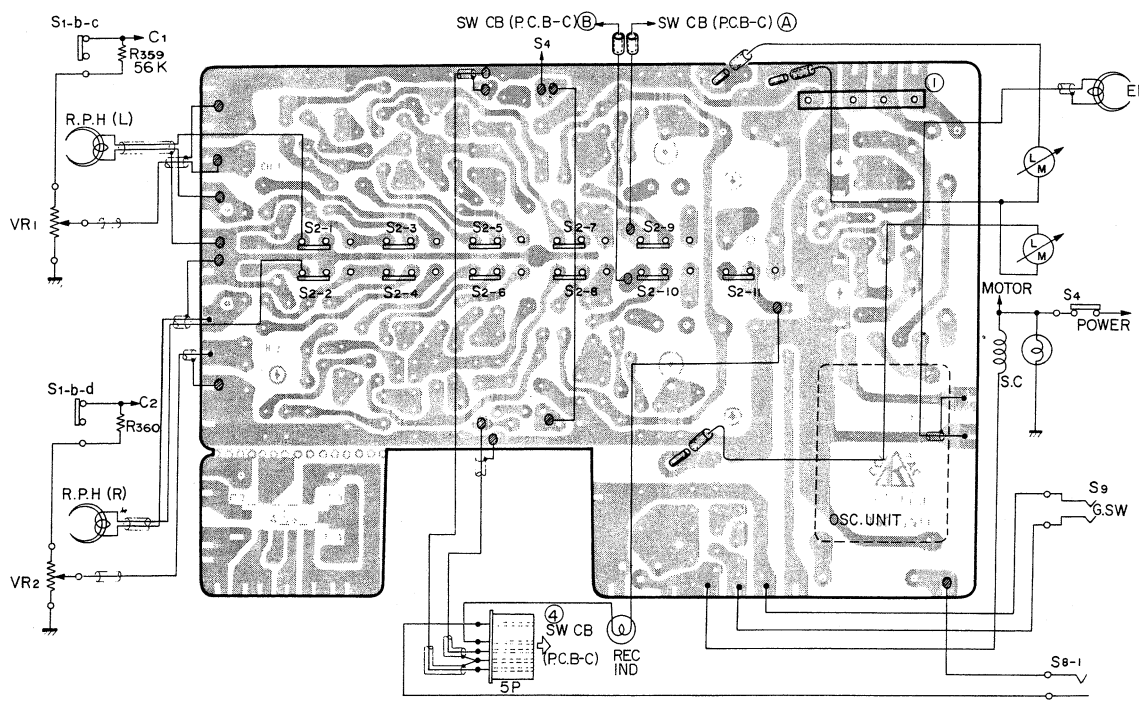
POWER CIRCUIT BOARD (P.C.B-F)



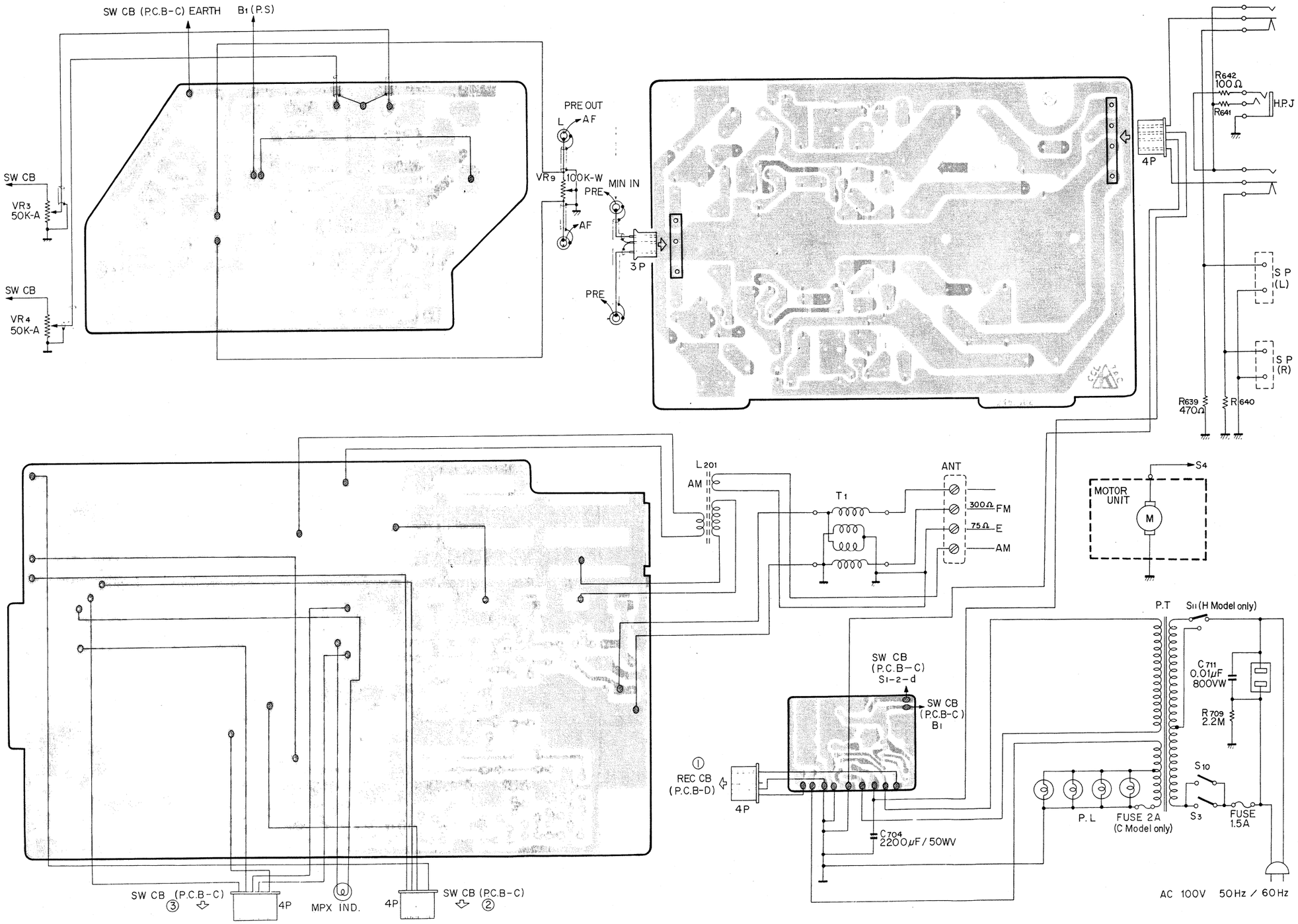
WIRING (SWITCH CIRCUIT BOARD)



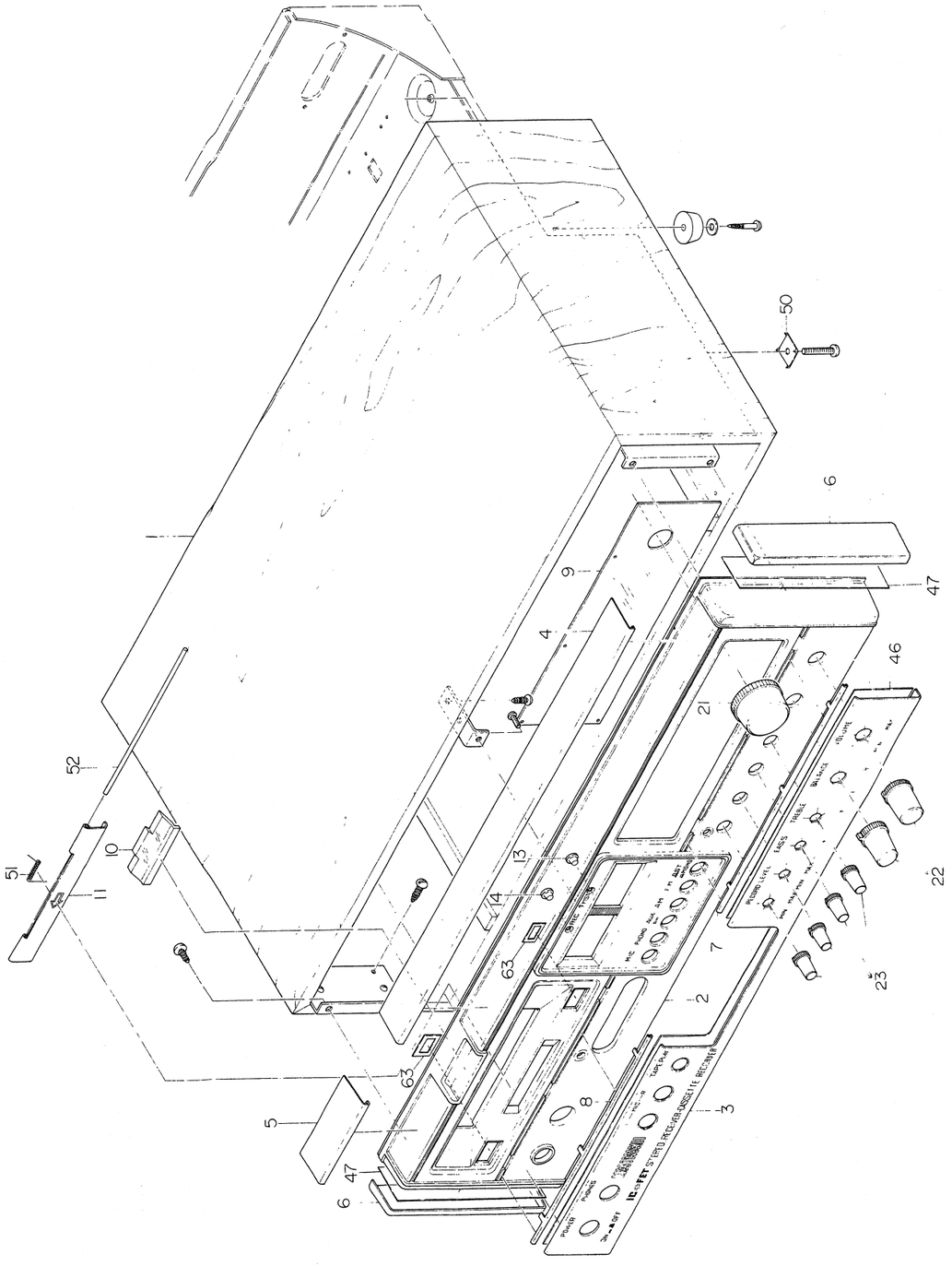
WIRING (REC CIRCUIT BOARD)



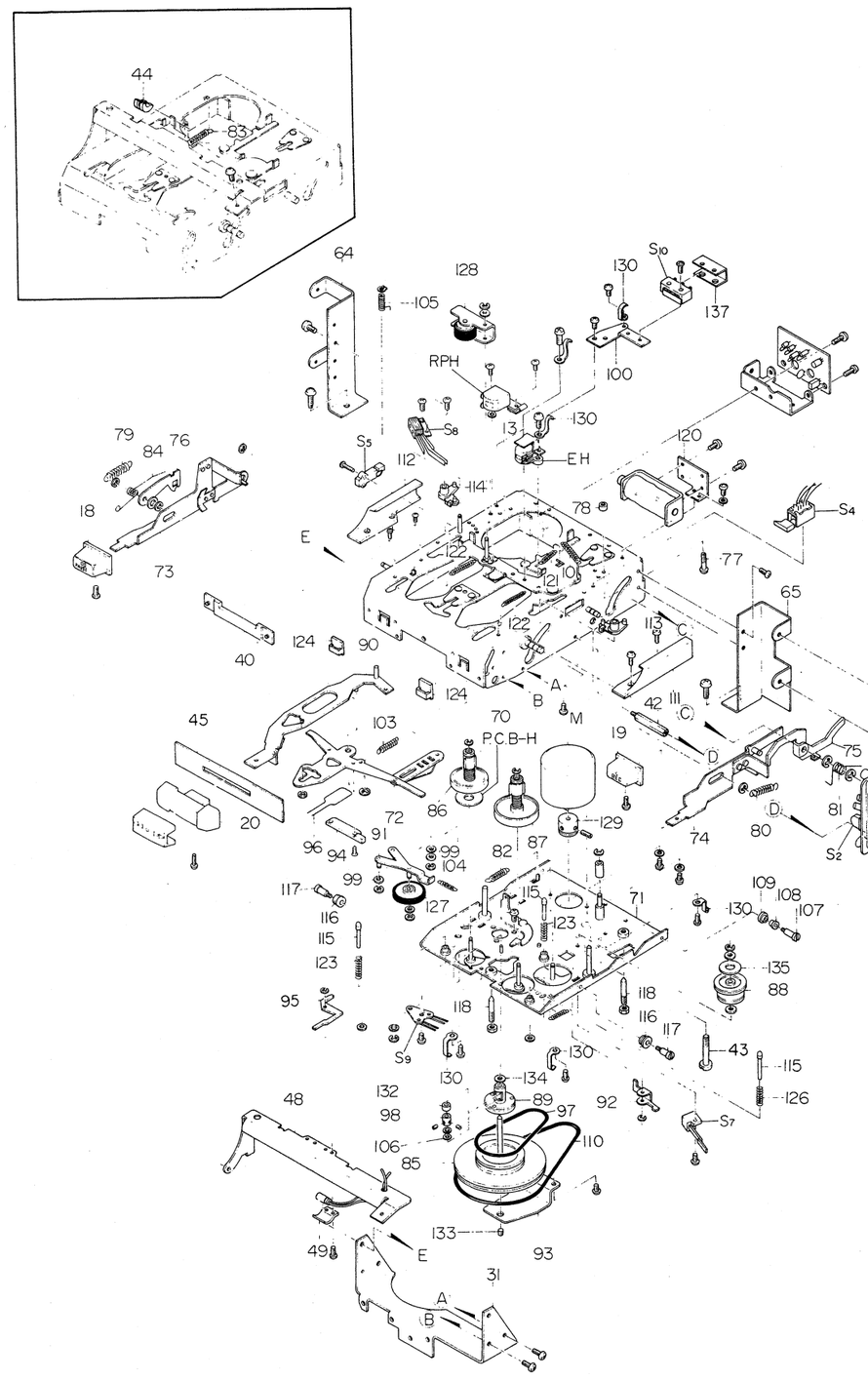
WIRING (TUNER/AF/PRE/POWER-CIRCUIT BOARD)



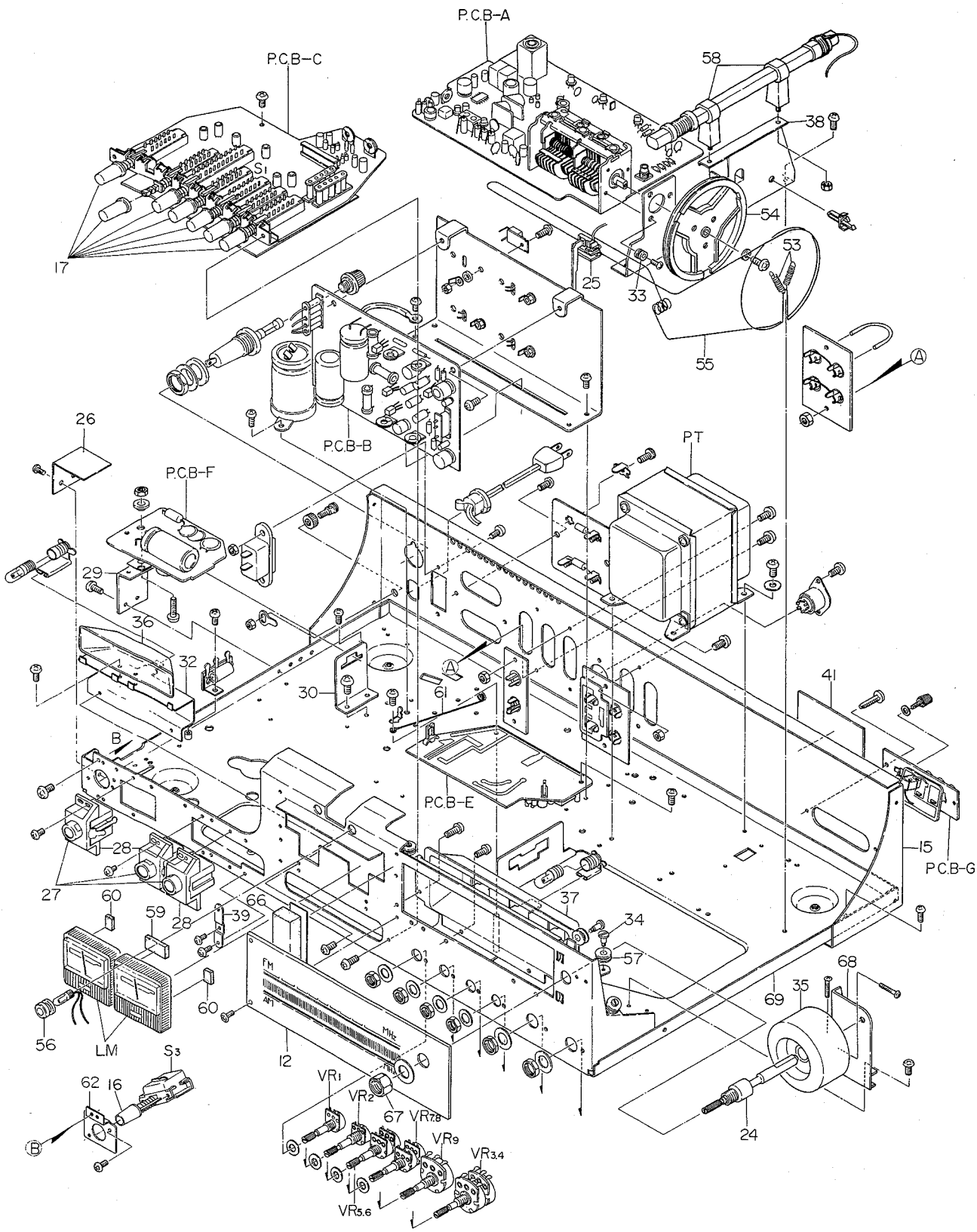
EXPLODED VIEW – 1



EXPLODED VIEW – 2



EXPLODED VIEW – 3



PARTS LIST

MECHANICAL PARTS

Note: Model indicated in the parentheses denotes that the parts is common thereto.

Ref. No.	Part No.	Description
1	24570292	Case assembly
2	2457001O	Front panel assembly
3	24570041	Name plate A
4	2457005O	Name plate B
5	2457006O	Name plate C
6	2457007O	Name plate D
7	2457030O	Name plate E
8	2457031O	Name plate F
9	24570101	Window A
10	2457008O	Window B
11	2457040O	Dust cover
12	2457050O	Tuning dial plate
13	2457036O	Lens
14	2457011O	Lens
15	2457035O	Back name plate
16	2457041O	Power button A assembly
17	2457013O	Push button
18	2457047O	Pause button
19	2457046O	REC button
20	24570431	Function button assembly
21	2457023O	Tuning knob assembly
22	2457026O	Volume knob assembly
23	24550120	Volume assembly
24	24572222	Tuning shaft assembly
25	24570481	Tuning dial pointer
26	24573111	Power switch cover
27	24572090	Headphone collar
28	24572100	Jack holder
29	24572120	Holder C
30	24572130	Holder D
31	24572930	Bearing plate
32	24572150	Metal fitting, Level meter
33	24572160	Grommet
34	24532670	Roller shaft B
35	24572180	Flywheel
36	24572190	Reflector board A
37	24572201	Reflector board B
38	24572210	Supporting board
39	24572330	Push switch holder (TPR-2010)
40	24572260	Lever guide
41(a)	24570520	Name plate, Specifications . . . H model
41(b)	24570530	Name plate, Specifications . . . C model
42	24572580	Supporter A
43	24572661	Lock screw
44	24572890	Cushion A
45	24572680	Function button cover
46	24572690	Adhesive paper A
47	24572710	Adhesive paper B
48	24572721	Lamp holder
49	24572170	Lamp spring
50	70812410	Washer, Case fastening
51	23580050	Dust cover spring (TP-1036)
52	23580041	Spindle shaft (TP-1036)
53	11782170	Drum spring
54	14972080	Drum
55	70960470	Tuning dial string
56	23463420	Bushing rubber (TP-1015)
57	13850140	Roller
58	14950481	Antenna bracket assembly
59	24572860	Cushion A, PC board
60	24572870	Cushion B, PC board
61	24572900	Wire holder
62	24572790	Switch holder A
63	24572850	H cushion
64	24572060	Holder A
65	24572070	Holder B
66	24572080	M cushion
67	24572760	Tuning nut
68	24572770	Supporter
69	24572281	Chassis assembly
70	24572303	Fixed chassis assembly
71	24572652	Moving chassis assembly
72	24572401	Auxiliary lever assembly
73	24572452	Pause lever assembly
74	24572492	REC lever assembly
75	24573230	REC lock lever
76	24572541	Lock plate A
77	23613012	Lock screw (TP-1042)
78	23613090	Grooved nut
79	24573120	Pause lever spring
80	24572600	REC lever spring
81	24572950	REC lock lever spring
82	24572620	Kick lever spring A
83	24572630	Kick lever spring B
84	24572641	Lock plate A spring
85	24573020	Flywheel assembly
86	24572991	Reel platform A assembly
87	23612391	Reel platform B assembly (TP-1042)
88	23612410	Rewind idler assembly (TP-1042)
89	23612950	Shaft bearing assembly (TP-1042)
90	24572242	Function lever assembly
91	24532601	Play idler assembly (TP-1042)
92	23612660	Shift arm (TP-1042)
93	24573090	Flywheel bearing plate
94	23612680	Spring holder (TP-1042)
95	23612693	Kick arm (TP-1042)
96	23612710	FR spring (TP-1042)
97	23612721	Rewind belt (TP-1042)
98	23612971	Drive roller (TP-1042)
99	23612740	Slide washer (TP-1042)
100	24573170	Switch bracket
101	24532770	Head base spring A (TPR-2010)
102	23612790	Rewind spring (TR-1042)
103	23612810	Function lever spring (TR-1042)
104	23612821	Play idler spring (TR-1042)
105	23612851	Pinch roller spring (TR-1042)
106	23612980	Cushion, Driver roller (TR-1042)
107	23622100	Guide roller shaft A (TR-1042)
108	23622110	Insulation roller
109	24573290	Guide roller B
110	24573150	Main belt
111	23582380	Guide rail, Right (TP-1036)
112	23582390	Guide rail, Left (TP-1036)
113	23582403	Slider guide, Right (TP-1036)
114	23582412	Slider guide, Left (TP-1036)
115	23582451	Cassette guide pin (TP-1036)
116	23613100	Guide roller A (TP-1042)
117	23582491	Guide roller shaft (TP-1036)
118	23582502	Chassis guide screw (TP-1036)
119	23582510	Stopper collar (TP-1036)
120	23582251	Plunger bracket (TP-1036)
121	23582570	Lock lever spring (TP-1036)
122	24573200	Slider guide spring (TP-1036)
123	23582612	Cassette guide spring A (TP-1036)
124	23582630	Stop rubber (TP-1036)
125	23582720	Wire holder (TP-1036)
126	12582880	Cassette guide spring (TP-1036)
127	23572862	Idler assembly (TP-1028)
128	24573130	Pinch lever assembly
129	24573161	Motor pulley
130	23574871	Lead retainer
131	22603090	Head adjusting screw
132	23574850	Oil stopper (TP-1028)
133	23582440	Screw for thrust (TP-1036)
134	70812300	Tefron washer
135	23575170	Washer, Oil stopper (TP-1028)
136	70811860	Washer
137	24573180	Switch cover

ELECTRICAL PARTS

Symbol No.	Part No.	Description
≪TUNER CIRCUIT BOARD SECTION≫		
P.C.B-A	24576022	Tuner circuit board
L101	24576180	FM coil
L102	70060150	FM coil
L103	70060170	FM coil
L104	70050220	FM choke coil
L105	70081390	67KC coil
L106	70081400	19KC coil
L107	70081410	38KC coil
L202	70070540	AM OSC coil
IFT1	41736140	FM IFT
IFT2	70081380	FM ratio
IFT3	70081170	AM IFT
CF1,2,3,4	70081360	FM CF
CFT	70081180	AM CFT
VC1~5	24576200	VC
CS1~3	70110460	Trimmer
MPX.F1,2	70280110	MPX filter
SFR101	70212960	Semi-fixed resistor 1kΩ
	24576420	Pilot lamp
IC	70270850	IC, LA3300
FET	95004150	FET, 2SK41-E
TR101	93078420	Transistor, 2SC784-R
TR102	93039440	Transistor, 2SC394-Y
TR103,105,201, 202	93038040	Transistor, 2SC380-Y
TR104,106,203, 204	93038030	Transistor, 2SC380-0
TR107	70260450	Transistor, 2SC380A-0
TR108,109	93037240	Transistor, 2SC372-Y
TR110	93037460	Transistor, 2SC374-BL
D101	70260490	Diode, 1S2139B
D102~6,201	80510600	Diode, 1N60
RESISTORS		
R154	81323300	33Ω 1/4W ±10%
R108	81325600	56Ω 1/4W ±10%
R102,107,113, 115,121,124, 129,134,137, 204,205	81321010	100Ω 1/4W ±10%
R151	81321210	120Ω 1/4W ±10%
R146,217	81322210	220Ω 1/4W ±10%
R142	81323310	330Ω 1/4W ±10%
R118,131,159	8, 323910	390Ω 1/4W ±10%
R117,130	81328210	820Ω 1/4W ±10%
R122,123,127, 128,135,136, 140,141,145, 147,148,152, 167,168,211, 216	81321020	1kΩ 1/4W ±10%
R105,174,225	81321220	1.2kΩ 1/4W ±10%
R109,112,119, 132	81321520	1.5kΩ 1/4W ±10%
R155,156	81322220	2.2kΩ 1/4W ±10%
R201,208,212	81323320	3.3kΩ 1/4W ±10%
R125,138,143, 158,214	81324720	4.7kΩ 1/4W ±10%
R120	81326820	6.8kΩ 1/4W ±10%
R163,164,224	81328220	8.2kΩ 1/4W ±10%
R157	8, 321820	1.8kΩ 1/4W ±10%
R106,110,126, 133,139,144, 149,150,165, 166,219	81321030	10kΩ 1/4W ±10%
R223	81321230	12kΩ 1/4W ±10%
R209,215	81321530	15kΩ 1/4W ±10%
R173	81321830	18kΩ 1/4W ±10%
R103,111,213, 220,221	81322230	22kΩ 1/4W ±10%
R111,153,202, 218	81323330	33kΩ 1/4W ±10%
R206	81324730	47kΩ 1/4W ±10%
R104	81325630	56kΩ 1/4W ±10%
R210	81326830	68kΩ 1/4W ±10%
R161,162	81328230	82kΩ 1/4W ±10%
R207	81321040	100kΩ 1/4W ±10%
R101	81321050	1MΩ 1/4W ±10%
R175	81433900	39Ω 1/2W ±5%
R116	81434710	470Ω 1/2W ±5%
R172	81431220	1.2kΩ 1/2W ±5%
R222	81432220	2.2kΩ 1/2W ±5%
R171	81542210	220Ω 1W ±10%
CAPACITORS		
C103,111	82130200	Ceramic 2pF
C114,117	82130400	Ceramic 4pF
C102	82130500	Ceramic 5pF
C106	82130600	Ceramic 6pF
C115	82131000	Ceramic 10pF
C104	82121200	Ceramic 12pF
C112	82121500	Ceramic 15pF
C101,204	82121800	Ceramic 18pF
C132,133	82124200	Ceramic 120pF
C107	82124700	Ceramic 200pF
C134	82125100	Ceramic 300pF
C108,110,118, 119,121,123, 125,127,129, 136,137,138, 149,205,209, 210,211,213, 216,217,221, 222	82158100	Ceramic 0.01μF
C152	82158300	Ceramic 0.02μF
C120,122,124, 126,128,215	82146100	Ceramic 0.001μF
C129	82146500	Ceramic 0.002μF
C105,109,115, 116,206,218, 224	82147200	Ceramic 0.0047μF
C130,202,207	82148100	Ceramic 0.01μF
C135,140,212, 214,220,145, 146,147,148	83371000	Electrolytic 1μF 50V
C143	83365000	Electrolytic 4.7μF 25V
C131,208	83361100	Electrolytic 10μF 25V
C223	83355100	Electrolytic 47μF 16V
C153	83365100	Electrolytic 47μF 25V
C139	83361200	Electrolytic 100μF 25V
C150	83355200	Electrolytic 470μF 16V
C151	93375200	Electrolytic 470μF 25V
C203	85175100	Styrol 300pF
C141,142	87178200	Mylar 0.015μF
≪AF CIRCUIT BOARD SECTION≫		
P.C.B-B	24576081	AF circuit board
SFR601,602	70213000	Semi-fixed resistor, 50kΩ-B
SFR603,604	70212950	Semi-fixed resistor, 500Ω-B
	70323830	3P miniature plug
	70323840	4P miniature plug
TR601,602	93063270	Transistor, 2SC632A-7
TR603,604,605, 606	93063470	Transistor, 2SC634A-7
TR607,608	91067870	Transistor, 2SA678-7
TR609,610,611, 612	94031445	Transistor, 2SD314-D.E
D601~6	70270250	Diode, 1S1212
RESISTORS		
R625,626	81322200	22Ω 1/4W ±10%

Symbol No.	Part No.	Description		
R615,616	81321510	150Ω	1/4W	±10%
R609,610	81321810	180Ω	1/4W	±10%
R623,624,627, 628	81323310	330Ω	1/4W	±10%
R617,618	81321020	1kΩ	1/4W	±10%
R619,620	81323320	3.3kΩ	1/4W	±10%
R607,608	81324720	4.7kΩ	1/4W	±10%
R613,614	81325620	5.6kΩ	1/4W	±10%
R621,622	81321030	10kΩ	1/4W	±10%
R605,606	81321530	15kΩ	1/4W	±10%
R635,636	81322230	22kΩ	1/4W	±10%
R603,604	81323330	33kΩ	1/4W	±10%
R633,634	81324730	47kΩ	1/4W	±10%
R611,612	81325630	56kΩ	1/4W	±10%
R601,602	81323340	330kΩ	1/4W	±10%
R633,634	81441200	12Ω	1/2W	±10%
R629,630,631, 632	70240140	0.5Ω	1W	±10%
CAPACITORS				
C607,608	82124100	Ceramic	120pF	
C619	82158300	Ceramic	0.02μF	
C601,602	83365000	Electrolytic	4.7μF	25V
C605,606	83351100	Electrolytic	10μF	16V
C613,614	83363100	Electrolytic	33μF	25V
C611,612	83325100	Electrolytic	47μF	6.3V
C609,610	83365100	Electrolytic	47μF	25V
C603,604	83351200	Electrolytic	100μF	16V
C615,616	83441300	Electrolytic	1000μF	35V
C617,618	87179300	Mylar	0.22μF	
≪SWITCH CIRCUIT BOARD SECTION≫				
P.C.B-C	24576091	Switch circuit board		
S1	24576510	Push switch		
SFR301,302	70213010	Semi-fixed resistor, 100kΩ-B		
	70323840	4P miniature plug		
	70323850	5P miniature plug		
	70320130	Octal tip		
	70320140	Octal contact		
TR301,302,305, 306	93100050	Transistor, 2SC1000-GR		
TR303,305,307, 308	93063270	Transistor, 2SC632A-71		
TR309,310	93037460	Transistor, 2SC374-BL		
RESISTORS				
R305,306	81322210	220Ω	1/4W	±10%
R311,312,331, 332	81323310	330Ω	1/4W	±10%
R309,310,329, 330,347,348	81326810	680Ω	1/4W	±10%
R357,358	81321020	1kΩ	1/4W	±10%
R335,336	81324720	4.7kΩ	1/4W	±10%
R315,316,335, 336	81325620	5.6kΩ	1/4W	±10%
R301,302,349, 350,351,352	81321030	10kΩ	1/4W	±10%
R353,354	81321230	12kΩ	1/4W	±10%
R345,346	81322230	22kΩ	1/4W	±10%
R321,322,343, 344,359,360, 369,370	81325630	56kΩ	1/4W	±10%
R361,362,367, 368	81328230	82kΩ	1/4W	±10%
R313,314,333, 334	81321040	100kΩ	1/4W	±10%
R363,364	81321540	150kΩ	1/4W	±10%
R345,346	81326840	680kΩ	1/4W	±10%
R325,326	81324710	470Ω	1/4W	±10%
R319,320	81323320	3.3kΩ	1/4W	±10%
R337,338	81313310	330Ω	1/4W	±5%
R339,340	81313320	3.3kΩ	1/4W	±5%

Symbol No.	Part No.	Description		
R317,318	81312230	22kΩ	1/4W	±5%
R341,342	81314730	47kΩ	1/4W	±5%
R303,304,323, 324	81838230	82k	1/4W	±5%
R307,308,327, 328	81832740	270kΩ	1/4W	±5%
CAPACITORS				
C301,302,313, 314	70190270	Tantalum	4.7μF	10V
C305,306,317, 318	82122900	Ceramic	47pF	
C309,310,311, 312,323,324, 329,330,331, 332	83311000	Electrolytic	1μF	50V
C303,304,315, 316,321,322	83351100	Electrolytic	10μF	16V
C307,308,319, 320	83325100	Electrolytic	47μF	6.3V
C325,326	87178200	Mylar	0.015μF	
C327,328	87178500	Mylar	0.047μF	
C333,334	70150920	Aluminum solid	0.1μF	6.3V
≪REC CIRCUIT BOARD SECTION≫				
P.C.B-D	24576091	REC circuit board		
L401,402	70070520	Trap coil		
S2	70312430	Slide switch		
SFR401,402	70213450	Semi-fixed resistor, 10kΩ-B		
SFR403,404	70213000	Semi-fixed resistor, 50kΩ-B		
	70323840	4P miniature plug		
	70300240	OSC unit		
	70320130	Octal tip		
	70320140	Octal contact		
TR401,402	93100050	Transistor, 2SC1000-GR		
TR403,404	93100060	Transistor, 2SC1000-BL		
TR405,406,407, 408	93037240	Transistor, 2SC372-Y		
D401~5	80510600	Diode, 1N60		
D406,407	70270250	Diode, 1S1212		
SCR	70270880	SCR, CR2AM-1		
RESISTORS				
R407,408	81321010	100Ω	1/4W	±10%
R411,412	81323310	330Ω	1/4W	±10%
R409,410	81325610	560Ω	1/4W	±10%
R417,418,445, 446	81321020	1kΩ	1/4W	±10%
R443,444	81323320	3.3kΩ	1/4W	±10%
R415,416,450, 451	81325620	5.6kΩ	1/4W	±10%
R449	81325630	56kΩ	1/4W	±10%
R419,420	81321030	10kΩ	1/4W	±10%
R435,436	81323330	33kΩ	1/4W	±10%
R441,442	81326830	68kΩ	1/4W	±10%
R413,414	81328230	82kΩ	1/4W	±10%
R437,438	81322230	22kΩ	1/4W	±10%
R439,440	81323340	330kΩ	1/4W	±10%
R401,402	81311000	10Ω	1/4W	±5%
R429,430	81318210	820Ω	1/4W	±5%
R425,426,427, 428	81314720	4.7kΩ	1/4W	±5%
R431,432	81311230	12kΩ	1/4W	±5%
R421,422	81312730	27kΩ	1/4W	±5%
R423,424	81315640	560kΩ	1/4W	±5%
R403,404,405, 406	81831040	100kΩ	1/4W	±5%
R433,434	81312230	22kΩ	1/4W	±5%
R448,452	81441210	120Ω	1/4W	±5%
R447	81441510	150Ω	1/4W	±5%

Symbol No.	Part No.	Description
		CAPACITORS
C450	82125100	Ceramic 300pF
C413,414	82122900	Ceramic 47pF
C403,404,439, 440	82125500	Ceramic 470pF
C427,428	70150930	Aluminum solid 0.2μF 6.3V
C409,410	70190460	Tantalum 15μF 10V
C431,432,435, 436	83371000	Electrolytic 1μF 50V
C401,402,429, 430,437	83365000	Electrolytic 4.7μF 25V
C411,412,419, 420,421,422, 466	83351100	Electrolytic 10μF 16V
C415,416	83325100	Electrolytic 47μF 6.3V
C407,408	83355100	Electrolytic 47μF 16V
C417,418,449	83365100	Electrolytic 47μF 25V
C438	83362200	Electrolytic 220μF 25V
C447	83325200	Electrolytic 470μF 6.3V
C443,444	85075500	Styrol 470pF
C405,406	85075800	Styrol 820pF
C441,442	87176100	Mylar 0.0015μF
C423,424	87176300	Mylar 0.0047μF
C425,426,448	87177200	Mylar 0.01μF
C433,434	87178100	Mylar 0.033μF
C445	87636300	Mylar 0.0015μF
		≪PRE CIRCUIT BOARD SECTION≫
P.C.B-E	24576070	Pre circuit board
VR1,2	24576220	Volume, 50kΩ-A
VR5,6,7,8	24576110	Volume (dual type), 50kΩ-A
	70323820	Pin jack
TR501,502	83063280	Transistor, 2SC632A-81
TR503,504	83063270	Transistor, 2SC632A-71
		RESISTORS
R509,510	81322710	270Ω 1/4W ±10%
R503,504	81323310	330Ω 1/4W ±10%
R507,508	81328210	680Ω 1/4W ±10%
R519,520	81321020	1kΩ 1/4W ±10%
R521,522	8, 324720	4.7kΩ 1/4W ±10%
R513,514	81325620	5.6kΩ 1/4W ±10%
R517,518	81321030	10kΩ 1/4W ±10%
R515,516	81321530	15kΩ 1/4W ±10%
R511,512	81321040	100kΩ 1/4W ±10%
R501,502	81838230	82kΩ 1/4W ±5%
R505,506	81831040	100kΩ 1/4W ±5%
		CAPACITORS
C501,502	70190320	Tantalum 3.3μF 16V
C517,518	70150940	Aluminum solid 0.33μF 6.3V
C505,506	82122900	Ceramic 47pF
C503,504,507, 508,509,510	83351100	Electrolytic 10μF 16V
C505,506	83325100	Electrolytic 47μF 6.3V
C511,512	87177400	Mylar 0.0068μF
C519,520	87178100	Mylar 0.01μF
C515,516	87178400	Mylar 0.033μF
C513,514	87178600	Mylar 0.068μF
		≪POWER CIRCUIT BOARD SECTION≫
P.C.B.-F	24576110	Power circuit board
TR701	94031445	Transistor, 2SD314-D,E
TR702,703	93053667	Transistor, 2SC536-F,G
D701	70270670	Diode, 10D-C
D702	70270680	Diode, 10D-CR
D703	70270390	Diode, 10D-1
D704	70270760	Diode, MZ210

Symbol No.	Part No.	Description
		RESISTORS
R703	81321020	1kΩ 1/4W ±10%
R705	81321230	12kΩ 1/4W ±10%
R702	81321040	100kΩ 1/4W ±10%
R704	81321030	10kΩ 1/4W ±10%
R706	81441210	120Ω 1/2W ±10%
R701	70290030	4.7Ω 2W ±10%
		CAPACITORS
C701,702,703	82159100	Ceramic 0.1μF
C707	83365000	Electrolytic 4.7μF 25V
C708	83351200	Electrolytic 100μF 16V
C709,710	83362200	Electrolytic 220μF 25V
C706	83361300	Electrolytic 100μF 25V
		≪ANT-AUX CIRCUIT BOARD SECTION≫
P.C.B-G	24576380	ANT. circuit board
T1	24576150	Balun
		RESISTORS
R365,366	81322230	22kΩ 1/4W ±10%
R369,370	81325630	56kΩ 1/4W ±10%
R367,368	81328230	82kΩ 1/4W ±10%
		≪OTHERS≫
P.C.B-H	24576480	Printed circuit board C
L201	24576120	Bar antenna coil
S3	70312550	Power switch (H model)
S3	70312560	Power switch (C model)
S4	24536080	Switch
S5	70312610	Pause switch
S7	23616042	FF switch
S8	24576431	Leaf switch
S9	23586030	G switch assembly
S10	24576630	Sleeping switch
S11	70310581	Voltage switch (H model)
M	06607810	Motor assembly
RPH	70461030	Record/playback head
EH	70460881	Erase head
LP	70450780	Solenoid
PT	24576272	Power transformer (H model)
PT	24576641	Power transformer (C model)
LM	70400520	Level meter
VR3,4	24576360	Volume, dual type 50kΩ-A
VR9	24576370	Volume, 100kΩ-W
	24532410	Switch cap
	70350650	Pilot lamp
	24576400	Pilot lamp (REC)
	24576410	Pilot lamp (cassette window)
	70323110	Pilot lamp socket (w/bracket)
	70322110	Pin plug
	70323970	3P miniature socket
	70323990	5P miniature socket
	24576320	4P miniature socket (w/cord)
	24576330	4P miniature socket (w/cord)
	24576470	4P miniature socket (w/cord)
	24576340	5P miniature socket (w/cord)
	70323090	6.3φ jack
	70323180	Headphone jack
	70323710	2P pin jack
	70322910	4P pin jack
	70324090	DIN socket
	70330840	4P antenna terminal
	70330870	6P screw terminal
	70323680	AC outlet
	70640400	Fuse holder (H model)
	70322991	Fuse holder (C model)
	70850620	Cord bushing

Symbol No.	Part No.	Description
	70340560	AC cord (H model)
	70340420	AC cord (C model)
	70330880	Earth terminal
	70324020	Short plug
	70640380	Wire clip A
	70640410	Wire clip B
	70640420	Wire clip C
	70640390	Purse lock
	70350900	Fuse 2A (C model)
	70350710	Fuse 1.5A (C model)
	70350050	Fuse 1.5A (H model)
	24576250	Radiation plate

Symbol No.	Part No.	Description
	24136080	EH shielded board
	24576620	Shield paper
	RESISTORS	
R637,638	81441010	100Ω 1/2W ±10%
R635,636	81444710	470Ω 1/2W ±10%
R709	81442250	2.2MΩ 1/2W ±10%
	CAPACITORS	
C711	70130560	UL 0.01μF
C704	24576650	Electrolytic 2200μF 50V

ACCESSORIES/PACKAGE LIST

Ref. No.	Part No.	Description
	02916220	Tape cassette
	70430200	FM antenna
	06923800	Connection cord, CW-14G
	06923810	Connection cord, CW-104R
	70320470	Siemens plug (H model)

Ref. No.	Part No.	Description
	24579061	Instructions booklet
	24578512	Printed indiv. packing
	24578521	Indiv. packing cushion assembly
	70571461	Polyvinyl sack (for case)
	24578530	Accessory box